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     (FILE 'HOME' ENTERED AT 16:41:05 ON 30 OCT 2001)

     FILE 'REGISTRY' ENTERED AT 16:41:14 ON 30 OCT 2001
L1             3 SEA ABB=ON  PLU=ON  XYLANASE/CN

     FILE 'CROPU, DGENE, DPCI, ENCOMPPAT, ENCOMPPAT2, EUROPATFULL, HCAOLD,
     HCAPLUS, IFIPAT, INPADOC, JAPIO, PAPERCHEM2, PATDD, PATDPA, PATOSDE,
     PATOSEP, PATOSWO, PCTFULL, PIRA, RAPRA, SYNTHLINE, TULSA, TULSA2,
     USPATFULL, WPIDS' ENTERED AT 16:41:31 ON 30 OCT 2001

     FILE 'REGISTRY' ENTERED AT 16:41:38 ON 30 OCT 2001
               SET SMARTSELECT ON
L2             SEL PLU=ON  L1 1- CHEM :      62 TERMS
               SET SMARTSELECT OFF

     FILE 'CROPU, DGENE, DPCI, ENCOMPPAT, ENCOMPPAT2, EUROPATFULL, HCAOLD,
     HCAPLUS, IFIPAT, INPADOC, JAPIO, PAPERCHEM2, PATDD, PATDPA, PATOSDE,
     PATOSEP, PATOSWO, PCTFULL, PIRA, RAPRA, SYNTHLINE, TULSA, TULSA2,
     USPATFULL, WPIDS' ENTERED AT 16:41:41 ON 30 OCT 2001
L3         12118 SEA ABB=ON  PLU=ON  L2
L4          1440 S L3 (L) (INHIBIT?) (L) (PROTEIN? OR GLYCOPROTEIN?)
L5           704 SEA ABB=ON  PLU=ON  L4 (L) (CEREAL OR WHEAT OR RYE OR TRITICALE
                  OR BARLEY OR SORGHUM OR OATS OR MAIZE OR RICE)
L6           197 SEA ABB=ON  PLU=ON  L5 AND PY<=1997
                 D TI 1-10
L7             7 SEA ABB=ON  PLU=ON  L6 AND CEREAL NOT (WHEAT OR RYE OR
                 TRITICALE OR BARLEY OR SORGHUM OR OATS OR MAIZE OR RICE)
                 D IBIB AB 1
                 D IBIB AB 2
                 D IBIB AB 3
                 D IBIB AB 4
                 D IBIB AB HIT 4
L8             0 SEA ABB=ON  PLU=ON  L6 AND (XYLANASE (W) INHIBIT?)
L9            48 SEA ABB=ON  PLU=ON  L4 AND (XYLANASE (W) INHIBIT?)
L10            0 SEA ABB=ON  PLU=ON  L9 AND PY<=1997
                 D L9 1
                 D IBIB L9 1
L11           37 DUP REM L9 (11 DUPLICATES REMOVED)
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=> d ibib ab 1-37

L11 ANSWER 1 OF 37 HCAPLUS COPYRIGHT 2001 ACS DUPLICATE 1
ACCESSION NUMBER: 2001:676913 HCAPLUS
DOCUMENT NUMBER: 135:238613
TITLE: Mutant xylanase with altered sensitivity to **xylanase inhibitors** and applications to processing plant materials
INVENTOR(S): Sibbesen, Ole; Sorensen, Jens Frisbaek
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 69 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001066711	A1	20010913	WO 2001-IB426	20010308

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: GB 2000-5585 A 20000308
GB 2000-15751 A 20000627

AB The present invention relates to mutant endo-.beta.-1,4-xylanase (EC 3.2.1.8) having an altered sensitivity to **xylanase inhibitors**. The present invention also relates to the use of these mutant enzymes in processing plant materials, such as: baking, processing cereals, starch prodn., wood processing, enhancing the bleaching of wood pulp. Mutant xylanases with altered sensitivity to **xylanase inhibitors** from Bacillus subtilis are claimed.

REFERENCE COUNT: 4
REFERENCE(S):
(1) McLauchlan, W; BIOCHEM J 1999, V338, P441 HCAPLUS
(2) McLauchlan, W; VTT SYMP (2000) 207 2ND EUROPEAN SYMPOSIUM ON ENZYMES IN GRAIN PROCESSING, CAPLUS 2001:287270 1999, P55
(3) Soerensen, J; WO 0039289 A 2000 HCAPLUS
(4) Tno; EP 0979830 A 2000 HCAPLUS

L11 ANSWER 2 OF 37 HCAPLUS COPYRIGHT 2001 ACS DUPLICATE 2
ACCESSION NUMBER: 2001:545426 HCAPLUS
DOCUMENT NUMBER: 135:91888
TITLE: Process of forming a refrigerated dough
INVENTOR(S): Poulsen, Charlotte Horsmans; Sorensen, Jens Frisbaek
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001052657	A1	20010726	WO 2001-IB168	20010117

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN,

YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
PRIORITY APPLN. INFO.: GB 2000-1136 A 20000118
AB A process of forming a refrigerated dough is described. The process comprises admixing cereal flour and water with a protein that can reduce or prevent the enzymic (xylanase) degrdn. of arabinoxylan present in the cereal flour.
REFERENCE COUNT: 4
REFERENCE(S): (1) Atwell, W; US 5792499 A 1998 HCAPLUS
(2) Debyser, W; JOURNAL OF CEREAL SCIENCE 1999, V30(1), P39 HCAPLUS
(3) McLauchlan, W; BIOCHEMICAL JOURNAL 1999, V338(2), P441 HCAPLUS
(4) Rouaou, X; JOURNAL OF CEREAL SCIENCE 1998, V28, P63

L11 ANSWER 3 OF 37 HCAPLUS COPYRIGHT 2001 ACS DUPLICATE 3
ACCESSION NUMBER: 2001:435239 HCAPLUS
DOCUMENT NUMBER: 135:30734
TITLE: Characterization and sequencing of a thermostable xylanase from Talaromyces emersonii and use of the xylanase in food supplement
INVENTOR(S): Gravesen, Troels Norgaard; Derkx, Patrick Maria Franciscus
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 78 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001042433	A2	20010614	WO 2000-IB1941	20001206

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
PRIORITY APPLN. INFO.: GB 1999-28968 A 19991207
AB A thermostable xylanase from Talaromyces emersonii capable of modifying a xylan polymer in a food and/or feed supplement is disclosed. Genomic, cDNA and encoded amino acid sequences of the T. emersonii xylanase are provided. The activity of the xylanase is substantially independent of any level of a wheat **xylanase inhibitor** that may be present in the food and/or feed supplement. The inclusion of the the T. emersonii xylanase in the cereal-based food or feed improves the digestibility.

L11 ANSWER 4 OF 37 PATOSEP COPYRIGHT 2001 WILA

PATENT APPLICATION - PATENTANMELDUNG - DEMANDE DE BREVET

ACCESSION NUMBER: 1999:707442 PATOSEP ED 20011018 EW 200141 FS OS
TITLE: **ENDO-BETA-1,4-XYLANASE INHIBITOR** FROM WHEAT FLOUR AND ITS EFFECT ON DIFFERENT **XYLANASES**.
ENDO-BETA-1,4-XYLANASE INHIBITOR AUS WEIZENMEHL UND SEINE WIRKUNG AUF VERSCHIEDENE XYLANASEN.

PROTEINES.

INVENTOR(S): SIBBESEN, Ole, Vaerebrovej 117B, DK-2280 Bagsv rd, DK; SOeRENSEN, Jens, Frisbaek, Nordvestpassagen 93, DK-2800 Aarhus, DK
PATENT ASSIGNEE(S): DANISCO A/S, Langebrogade 1, P.O. Box 17, 1001 Copenhagen K., DK
PATENT ASSIGNEE NO: 1171441
AGENT: Harding, Charles Thomas, D. Young & Co. 21 New Fetter Lane, London EC4A 1DA, GB
AGENT NUMBER: 70742
SOURCE: Wila-EPZ-2001-H41-T1a
DOCUMENT TYPE: Patent
LANGUAGE: Anmeldung in Englisch; Veroeffentlichung in Englisch
DESIGNATED STATES: R AT; R BE; R CH; R CY; R DE; R DK; R ES; R FI; R FR; R GB; R GR; R IE; R IT; R LI; R LU; R MC; R NL; R PT; R SE; R AL; R LT; R LV; R MK; R RO; R SI
PATENT INFO.PUB.TYPE: EPA1 EUROPAEISCHE PATENTANMELDUNG (Internationale Anmeldung)
PATENT INFORMATION:

PATENT NO	KIND	DATE
EP 1141254	A1	20011010

'OFFENLEGUNGS' DATE: 20011010
APPLICATION INFO.: EP 1999-959641 19991217
PRIORITY APPLN. INFO.: GB 1998-199828599 19981223
GB 1999-199907805 19990406
GB 1999-199908645 19990415
RELATED DOC. INFO.: WO 99-IB2071 991217 INTAKZ
WO 0039289 000706 INTPNR
EPA1 EUROPAEISCHE PATENTANMELDUNG (Internationale Anmeldung)
EPLU LEGAL STATUS, UPDATE

ABEN WO-ABSTRACT:
The present invention discloses an **endo-*beta*-1,4-xylanase inhibitor** as well as **xylanases**.

L11 ANSWER 5 OF 37 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 2001:542936 HCAPLUS
DOCUMENT NUMBER: 135:241213
TITLE: Purification and partial characterization of an endoxylanase inhibitor from barley
AUTHOR(S): Goesaert, H.; Debyser, W.; Gebruers, K.; Proost, P.; Van Damme, J.; Delcour, J. A.
CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Heverlee, B-3001, Belg.
SOURCE: Cereal Chem. (2001), 78(4), 453-457
CODEN: CECHAF; ISSN: 0009-0352
PUBLISHER: American Association of Cereal Chemists
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Hordeum vulgare L. **xylanase inhibitor** (HVXI), an **endoxylanase inhibitor** with a **protein** structure, was purified to homogeneity from barley (Hordeum vulgare L.). HVXI is a nonglycosylated monomeric **protein**, with a mol. wt. of .apprxeq.40,000 and a pI .gtoreq. 9.3. Although it **inhibits** different **endoxylanases** to a varying degree, the activities of an .alpha.-L-arabinofuranosidase and a .beta.-D-xylosidase were not **inhibited**. Apparently, HVXI occurs in two mol. forms. These characteristics and the N-terminal sequences of the composing polypeptides show that HVXI is homologous with Triticum aestivum L. **xylanase inhibitor** I, an **endoxylanase inhibitor** from wheat flour.

REFERENCE COUNT: 35
REFERENCE(S):
(1) Altschul, S; Nucleic Acids Res 1997, V25, P3389 HCAPLUS
(2) Banik, M; Mol Gen Genet 1997, V253, P599 HCAPLUS
(3) Benjavongkulchai, E; Can J Bot 1989, V67, P297

HCAPLUS
(4) Biely, P; J Biotechnol 1997, V57, P151 HCAPLUS
(5) Biely, P; Trends Biotechnol 1985, V3, P286 HCAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 6 OF 37 EUROPATFULL COPYRIGHT 2001 WILA DUPLICATE 4

PATENT APPLICATION - PATENTANMELDUNG - DEMANDE DE BREVET

ACCESSION NUMBER: 979830 EUROPATFULL EW 200007 FS OS
TITLE: A novel class of **xylanase inhibitors**
.
Eine neue Klasse von **Inhibitoren** der **Xylanase**.
Une nouvelle classe d'**inhibiteurs** de **xylanase**.
INVENTOR(S): Hessing, Martin, Dassenakker 33, 3994 ED Houten, NL; Happe, Randolph Peter, Leverkruidweg 339, 1508 WN Zaandam, NL
PATENT ASSIGNEE(S): NEDERLANDSE ORGANISATIE VOOR TOEGEPAST-NATUURWETENSCHAPPELIJK ONDERZOEK TNO, Schoemakerstraat 97, P.O. Box 60680, 2628 VK Delft, NL
PATENT ASSIGNEE NO: 285526
AGENT: de Bruijn, Leendert C. et al., Nederlandsch Octrooibureau P.O. Box 29720, 2502 LS Den Haag, NL
AGENT NUMBER: 19641
OTHER SOURCE: BEPA2000012 EP 0979830 A1 0009
SOURCE: Wila-EPZ-2000-H07-T1a
DOCUMENT TYPE: Patent
LANGUAGE: Anmeldung in Englisch; Veroeffentlichung in Englisch
DESIGNATED STATES: R AT; R BE; R CH; R CY; R DE; R DK; R ES; R FI; R FR; R GB; R GR; R IE; R IT; R LI; R LU; R MC; R NL; R PT; R SE; R AL; R LT; R LV; R MK; R RO; R SI
PATENT INFO.PUB.TYPE: EPA1 EUROPAEISCHE PATENTANMELDUNG
PATENT INFORMATION:

PATENT NO	KIND	DATE
EP 979830	A1	20000216

'OFFENLEGUNGS' DATE: 20000216
APPLICATION INFO.: EP 1998-202704 19980812
ABEN The invention relates to a novel class of **xylanase-inhibiting proteins**, capable of forming a stable complex with endo-**xylanases**, thereby inactivating the latter. The **inhibitors** can be applied as stabilising agents to xylan-degrading enzymes used for industrial processes, e.g for food, feed and non-food applications as paper and pulp technology. Furthermore, the invention relates to strain improvement of industrial **xylanase**-producing organisms as well as to the selection of cereals, in particular wheat, in which **xylanase-inhibiting proteins** are absent. Finally the invention relates to quantification and control of **xylanase inhibitors** for assuring effective and controlled dosing of **xylanases** applied for various industrial processes.

L11 ANSWER 7 OF 37 HCAPLUS COPYRIGHT 2001 ACS DUPLICATE 5
ACCESSION NUMBER: 2000:457204 HCAPLUS
DOCUMENT NUMBER: 133:88573
TITLE: Xylanases and wheat flour **xylanase inhibitors** and their effects on dough stickiness
INVENTOR(S): Sibbesen, Ole; Sorensen, Jens Frisbaek
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 112 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000039289	A2	20000706	WO 1999-IB2071	19991217
WO 2000039289	A3	20010412		
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
BR 9916507	A	20011002	BR 1999-16507	19991217
EP 1141254	A1	20011010	EP 1999-959641	19991217
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
FR 2788781	A1	20000728	FR 1999-16362	19991223

PRIORITY APPLN. INFO.:

GB 1998-28599	A	19981223
GB 1999-7805	A	19990406
GB 1999-8645	A	19990415
WO 1999-IB2071	W	19991217

AB The present invention discloses an endo-.beta.-1,4-**xylanase inhibitor** as well as xylanases and their interactions and role in the stickiness of dough. The endogenous endo-.beta.-1,4-**xylanase inhibitor** from wheat flour was isolated and characterized. The inhibitor privides means for selecting xylanases which are not detrimentally affected by endo-.beta.-1,4-**xylanase inhibitors**. Bacterial xylanases and mutants are disclosed that provide dough exhibiting favorable vol. and acceptable stickiness when compared to doughs comprising fungal xylanases. In addn., the presence of glucanase enzymes in certain amts. are shown to have a detrimental effect on the xylanases.

L11 ANSWER 8 OF 37 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 2001:287269 HCAPLUS
TITLE: TAXI, a new class of enzyme inhibitors
AUTHOR(S): Debyser, W.; Peumans, W. J.; Goesaert, H.; Gebruers, K.; Van Damme, E. J. M.; Delcour, J. A.
CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Heverlee, B-3001, Belg.
SOURCE: VTT Symp. (2000), 207, 47-54
CODEN: VTTSE9; ISSN: 0357-9387
PUBLISHER: Valtion Teknillinen Tutkimuskeskus
DOCUMENT TYPE: Journal
LANGUAGE: English
AB To demonstrate that cereals contain besides .alpha.-amylase and protease **inhibiting proteins** of **endoxylanases**, the Triticum aestivum **xylanase-inhibitor** (TAXI) was isolated and characterized. The discovery of TAXI opens an entirely new area in research since it demonstrates the existence of a group of **proteins** which are equally relevant for the improvement of plant disease resistance, as well as for nutraceutical or pharmaceutical applications.
REFERENCE COUNT: 27
REFERENCE(S):
(1) Birk, Y; Methods Enzym 1976, V45, P723 HCAPLUS
(2) Buonocore, V; Phytochemistry 1977, V16, P811 HCAPLUS
(3) Cleemput, G; J Cereal Sci 1995, V22, P139 HCAPLUS
(4) Cleemput, G; J Cereal Sci 1997, V26, P55 HCAPLUS
(5) Cleemput, G; Plant Physiol 1997, V115, P1619 HCAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 9 OF 37 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 2001:287268 HCAPLUS
TITLE: Endogenous inhibitors of the endoproteinases and other enzymes of barley
AUTHOR(S): Jones, Berne L.; Marinac, Laurie A.
CORPORATE SOURCE: Cereal Crops Research Unit, USDA/Agricultural Research Service, Madison, WI, 53705, USA
SOURCE: VTT Symp. (2000), 207, 39-46
CODEN: VTTSE9; ISSN: 0357-9387
PUBLISHER: Valtion Teknillinen Tutkimuskeskus
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A review with 18 refs. Topics discussed include the **inhibitors** of carbohydrate-degrading enzymes such as the .alpha.-amylase **inhibitor**, the limit dextrinase **inhibitor**, and the **xylanase inhibitor**; the identification of **proteinase inhibitors**; the demonstration of **inhibitors** in barley and malt; the sepn. of barley and malt **inhibitors** by ion exchange chromatog.; the purifn. and identification of two endoproteinase **inhibitors**; the observation that the **inhibitors** affect mainly the malt cysteine **proteinases**; the suggestion that **inhibitors** are complexed with **proteinases** in exts.; attempts to dissoc. the enzyme-**inhibitor** complex; and the finding that adding endogenous endoproteinase **inhibitors** to mashes lowers wort sol. **protein** levels.
REFERENCE COUNT: 18
REFERENCE(S): (1) Bech, L; Proceedings of the European Brewery Convention Congress 1995, P561 HCAPLUS
(2) Castagnaro, A; FEBS Letters 1994, V349, P117 HCAPLUS
(3) Debyser, W; J Cereal Sci 1999, V30, P39 HCAPLUS
(4) Enari, T; J Inst Brew 1964, V70, P405 HCAPLUS
(6) Jones, B; J Am Soc Brew Chem 1995, V53, P160 HCAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 10 OF 37 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1999:226308 HCAPLUS
DOCUMENT NUMBER: 131:55731
TITLE: Sugar ring distortion in the glycosyl-enzyme intermediate of a family G/11 xylanase
AUTHOR(S): Sidhu, Gary; Withers, Stephen G.; Nguyen, Nham T.; McIntosh, Lawrence P.; Ziser, Lothar; Brayer, Gary D.
CORPORATE SOURCE: Department of Biochemistry and Molecular Biology, University of British Columbia, Vancouver, V6T 1Z3, Can.
SOURCE: Biochemistry (1999), 38(17), 5346-5354
CODEN: BICHAW; ISSN: 0006-2960
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The 1.8 .ANG. resoln. structure of the glycosyl-enzyme intermediate formed on the retaining endo-.beta.-1,4-xylanase from Bacillus circulans was detd. using x-ray crystallog. techniques. The 2-fluoroxylose residue bound in the -1 subsite adopted a 2,5B (boat) conformation, allowing atoms C5, O5, C1, and C2 of the sugar to achieve coplanarity as required at the oxocarbenium ion-like transition states of the double-displacement catalytic mechanism. Comparison of this structure to that of a mutant of this same enzyme noncovalently complexed with xylotetraose reported previously revealed a no. of differences beyond the distortion of the sugar moiety. Most notably, a bifurcated H-bond interaction was formed in the glycosyl-enzyme intermediate involving H.eta. of Tyr-69, the endocyclic oxygen atom (O5) of the xylose residue in the -1 subsite, and the O.epsilon.2 atom of the catalytic nucleophile, Glu-78. To gain addnl. understanding of the role of Tyr-69 at the active site of this enzyme, the authors also detd. the 1.5 .ANG. resoln. structure of the catalytically

inactive Y69F mutant. Interestingly, no significant structural perturbation due to the loss of the phenolic group was obsd. These results suggest that the interactions involving the phenolic group of Tyr-69, O5 of the proximal saccharide, and the Glu-78 O.epsilon.2 atom are important for the catalytic mechanism of this enzyme, and it is proposed that, through charge redistribution, these interactions serve to stabilize the oxocarbenium-like ion of the transition state. Studies of the covalent glycosyl-enzyme intermediate of this xylanase also provide insight into specificity, as contacts with C5 of the xylose moiety exclude sugars with hydroxymethyl substituents, and the mechanism of catalysis, including aspects of stereoelectronic theory as applied to glycoside hydrolysis.

REFERENCE COUNT: 50

REFERENCE(S):
(2) Baker, E; Prog Biophys Mol Biol 1984, V44, P97 HCAPLUS
(3) Bernstein, F; J Mol Biol 1977, V112, P535 HCAPLUS
(5) Burmeister, W; Structure 1997, V5, P663 HCAPLUS
(6) Campbell, R; Proceedings of the Second TRICEL Symposia on Trichoderma reesei and Other Hydrolases 1993, P63 HCAPLUS
(7) Coughlan, M; Biotechnol Appl Biochem 1993, V17, P259 HCAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 11 OF 37 HCAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1999:205885 HCAPLUS
DOCUMENT NUMBER: 131:29048

TITLE: A novel class of **protein** from wheat which **inhibits xylanases**

AUTHOR(S): McLauchlan, W. Russell; Garcia-Conesa, Maria T.; Williamson, Gary; Roza, Martinus; Ravestein, Peter; Maat, Jan
CORPORATE SOURCE: Institute of Food Research, Norwich, NR4 7UA, UK

SOURCE: Biochem. J. (1999), 338(2), 441-446
CODEN: BIJOAK; ISSN: 0264-6021
PUBLISHER: Portland Press Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB We have purified a novel class of **protein** that can **inhibit** the activity of **endo-.beta.-1,4-xylanases**. The **inhibitor** from wheat (Triticum aestivum, var. Soisson) is a glycosylated, monomeric, basic **protein** with a pI of 8.7-8.9, a mol. mass of 29 kDa and a unique N-terminal sequence of AGGKTGQVTVFWGRN. We have shown that the **protein** can **inhibit** the activity of two family-11 **endo-.beta.-1,4-xylanases**, **a** recombinant enzyme from Aspergillus niger and an enzyme from Trichoderma viride. The **inhibitory** activity is heat and protease sensitive. The kinetics of the **inhibition** have been characterized with the A. niger enzyme using sol. wheat arabinoxylan as a substrate. The Km for sol. arabinoxylan in the absence of **inhibitor** is 20.+-.2 mg/mL with a kcat of 103.+-.6 s-1. The kinetics of the **inhibition** of this reaction are competitive, with a Ki value of 0.35 .mu.M, showing that the **inhibitor** binds at or close to the active site of free **xylanase**. This report describes the first isolation of a **xylanase inhibitor** from any organism.

REFERENCE COUNT: 23

REFERENCE(S):
(1) Abu-Goukh, A; Physiol Plant Pathol 1983, V23, P111 HCAPLUS
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ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 12 OF 37 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1999:521824 HCAPLUS
DOCUMENT NUMBER: 132:136634
TITLE: Triticum aestivum **Xylanase Inhibitor** (TAXI), a New Class of Enzyme Inhibitor Affecting Breadmaking Performance
AUTHOR(S): Debyser, W.; Peumans, W. J.; Van Damme, E. J. M.; Delcour, J. A.
CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Heverlee, B-3001, Belg.
SOURCE: J. Cereal Sci. (1999), 30(1), 39-43
CODEN: JCSCDA; ISSN: 0733-5210
PUBLISHER: Academic Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB To demonstrate that cereals contain **protein inhibitor** (s) of **endoxylanases**, the Triticum aestivum **xylanase-inhibitor** (TAXI) was isolated and characterized. The authors also investigated whether the **endoxylanase inhibitor** identified is active during the breadmaking process. The N-terminus of TAXI had no sequence similarity with any other known **protein**. TAXI was eluted from the gel filtration column with an apparent Mr of .apprx.40 kDa and migrated upon isoelec. focusing as a single band with a pI of .apprx.8.8. Wheat loaves were prepd. without or with A. niger **endoxylanase** by using a straight dough procedure. The max. increase in bread vol. produced by the A. niger **endoxylanase** was .apprx.20%. When the same level of **endoxylanase** activity was added together with purified TAXI, no increase in bread vol. occurred. Upon addn. of TAXI alone, the bread vol. was reduced by 8%. Thus, endogeneous wheat flour **endoxylanases** have a pos. effect on bread vol. and are **inhibited** by TAXI. Accordingly, breeding TAXI-deficient wheat varieties or varieties with low levels of expression of this **inhibitor** may be important for improving breadmaking performance. (c) 1999 Academic Press.
REFERENCE COUNT: 27
REFERENCE(S): (2) Birk, Y; Methods Enzymology 1976, V45, P723 HCAPLUS
(4) Cleemput, G; Journal of Cereal Science 1995, V22, P139 HCAPLUS
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(9) Debyser, W; WO 9848278 1997-1998 HCAPLUS
(11) Debyser, W; Journal of Cereal Science 1997, V26, P67 HCAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 13 OF 37 PCTFULL COPYRIGHT 2001 MicroPatent
ACCESSION NUMBER: 1998049278 PCTFULL
TITLE (ENGLISH): **INHIBITORS** OF CELLULOLYTIC, XYLANOLYTIC AND #bgr#-GLUCANOLYTIC ENZYMES
TITLE (FRENCH): **INHIBITEURS** D'ENZYMES CELLULOLYTIQUES, XYLANOLYTIQUES ET #bgr#-GLUCANOLYTIQUES
INVENTOR(S): DEBYSER, Winok; DELCOUR, Jan
PATENT ASSIGNEE(S): K.U. LEUVEN RESEARCH & DEVELOPMENT
LANGUAGE OF PUBL.: English
LANGUAGE OF FILING: English
DOCUMENT TYPE: Patent
PATENT INFORMATION:

NUMBER	KIND	DATE
WO 9849278	A1	19981105

DESIGNATED STATES: AL AU BA BB BG BR CA CN CU CZ EE GE GW HU ID IL IS JP KP KR LC LK LR LT LV MG MK MN MX NO NZ PL RO SG SI SK SL TR TT UA US UZ VN YU GH GM KE LS MW SD SZ UG ZW AM

AZ BY KG KZ MD RU TJ TM AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN ML MR NE SN TD TG

APPLICATION INFO.: WO 1998-EP2590 19980504
PRIORITY (ORIGINAL): EP 1997-97870060.7 19970430

ABEN The present invention concerns an **inhibitor** of xylanolytic and/or #bgr#-glucanolytic enzymes, method for obtaining the **inhibitor**, said **inhibitor** and processes for obtaining micro-organism, plant or plant material wherein the activity of the **inhibitor** according to the invention is increased or reduced and to the use of the **inhibitor**, the cited micro-organism, plant or plant material in a variety of processes and applications.

ABFR La presente invention concerne un **inhibiteur** d'enzymes xylanolytiques et/ou #bgr#-glucanolytiques, un procede d'obtention de cet **inhibiteur** ainsi que des processus d'obtention de micro-organisme, de plante ou de materiel vegetal dans lesquels l'activite de l'**inhibiteur** de l'invention est accrue ou reduite. L'invention concerne encore l'utilisation de cet **inhibiteur**, dudit micro-organisme, de ladite plante ou dudit materiau vegetal dans plusieurs processus et applications.

L11 ANSWER 14 OF 37 HCAPLUS COPYRIGHT 2001 ACS DUPLICATE 6
ACCESSION NUMBER: 1998:559597 HCAPLUS
DOCUMENT NUMBER: 129:315335
TITLE: Evidence for the presence of a pentosanase inhibitor in wheat flours
AUTHOR(S): Tousu, ac.; dauthrl, S.
CORPORATE SOURCE: INRA, Unite de Technologie des Cereales et des Agropolymeres, Montpellier, 34060, Fr.
SOURCE: J. Cereal Sci. (1998), 28(1), 63-70
CODEN: JCSCDA; ISSN: 0733-5210
PUBLISHER: Academic Press
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The solubilization, by a pentosanase prepn. from Aspergillus niger, of arabinoxylans from water-unextractable pentosans (WUP) isolated from wheat flour was much reduced when carried out in flour aq. exts. as medium, instead of pure buffer. When flour exts. were previously heated at 100.degree.C, the extent of arabinoxylan solubilization was almost restored. The heating at 100.degree.C and centrifugation of the flour exts. removed approx. one-third of the sol. **protein** but very low amts. of arabinoxylan. Increasing the concn. of exts. decreased the extent of WUP arabinoxylan solubilization. There was slight variability between wheat cultivars Apollo, Soissons and Thesee in the extent of the **inhibitory** effect. Compds. responsible for this effect were mainly present in wheat grain endosperm but also in bran. Different microbial **xylanases** from A. niger (Grindamyl S 100 and EI, an **endoxylanase** purified from this com. prepn.) and Trichoderma strains (C1, a partially purified cellulase/hemicellulase complex, and the com. prepns. Veron HE and Multifect XL) were strongly **inhibited**. Also the arabinofuranosidase activity present in Grindamyl S 100 was **inhibited** but a lower extent than **xylanases**. Pronase treatment and **protein** addn. in the exts. had no effect on the level of **inhibition**. (c) 1998 Academic Press.

L11 ANSWER 15 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY80118 peptide DGENE
TITLE: New **xylanase inhibiting protein** useful as stabilizers for xylan degrading enzymes applied in food, feed and nonfood as paper and pulp technology -

INVENTOR: Hessing M; Happe R P
PATENT ASSIGNEE: (NEDE)NEDERLANDSE ORG TOEGEPAST.
PATENT INFO: EP 979830 A1 20000216 9p
APPLICATION INFO: EP 1998-202704 19980812
PRIORITY INFO: EP 1998-202704 19980812
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-173288 [16]
AB The present sequence represents the N-terminal sequence of a **xylanase inhibiting protein**. The **xylanase inhibiting protein** is characterised by having an apparent molecular weight of 20 and 40 kDa. The **xylanase inhibiting protein** is useful as a stabiliser of xylan degrading enzymes used for the treatment of cereals such as for animal feedstuffs or as a stabiliser of xylan degrading enzymes used in the brewing process, as bread improver, as a natural paper bleaching agent and for the production of xylose. A method from the present invention for the isolation of a **xylanase inhibiting protein** can also be used for the detection, quantification and control of **xylanase inhibitors**, used to predict the resulting activity of **xylanases** applied for industrial processes and used for optimizing the dosages of **xylanase** applied for industrial processes.

L11 ANSWER 16 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY93764 peptide DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence is derived from an endo-beta-1,4-**xylanase inhibitor**. The **protein** is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 17 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY93763 peptide DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent

LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence is derived from an endo-beta-1,4-**xylanase** **inhibitor**. The **protein** is obtained from wheat flour. The specification also describes a mutant **xylanase** **protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase** **inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 18 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY93762 peptide DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence is derived from an endo-beta-1,4-**xylanase** **inhibitor**. The **protein** is obtained from wheat flour. The specification also describes a mutant **xylanase** **protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase** **inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 19 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY93761 peptide DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence is derived from an endo-beta-1,4-**xylanase** **inhibitor**. The **protein** is obtained from wheat flour. The specification also describes a mutant **xylanase** **protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for

making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 20 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY93760 peptide DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N) DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence is derived from an endo-beta-1,4-**xylanase inhibitor**. The **protein** is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 21 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY93759 peptide DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N) DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence is derived from an endo-beta-1,4-**xylanase inhibitor**. The **protein** is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating

and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 22 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY93758 peptide DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence is derived from an endo-beta-1,4-**xylanase inhibitor**. The **protein** is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 23 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY93757 peptide DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence is derived from an endo-beta-1,4-**xylanase inhibitor**. The **protein** is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 24 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY93756 peptide DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing

non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence is derived from an endo-beta-1,4-**xylanase inhibitor**. The **protein** is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 25 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY93755 Protein DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence represents a mutant endo-beta-1,4-**xylanase**. The specification also describes an endo-beta-1,4-**xylanase inhibitor**, which is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 26 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY93754 Protein DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406

GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence represents a mutant endo-beta-1,4-**xylanase** . The specification also describes an endo-beta-1,4-**xylanase** **inhibitor**, which is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 27 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY93753 Protein DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence represents a mutant endo-beta-1,4-**xylanase** . The specification also describes an endo-beta-1,4-**xylanase** **inhibitor**, which is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 28 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY93752 Protein DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence represents an endo-beta-1,4-**xylanase**. The specification also describes an endo-beta-1,4-**xylanase** **inhibitor**, which is obtained from wheat flour. The specification

also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 29 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAY93751 Protein DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence represents an endo-beta-1,4-**xylanase**. The specification also describes an endo-beta-1,4-**xylanase inhibitor**, which is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 30 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAW86812 peptide DGENE
TITLE: Inhibitors of cellulolytic, xylanolytic or beta-glucanolytic enzymes - useful in the brewing, baking and paper and pulp industries
INVENTOR: Debyser W; Delcour J
PATENT ASSIGNEE: (LEUV-N)LEUVEN RES & DEV.
PATENT INFO: WO 9849278 A1 19981105 39p
APPLICATION INFO: WO 1998-EP2590 19980504
PRIORITY INFO: EP 1997-870060 19970430
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 1999-024051 [02]
AB This represents the N-terminal sequence of the 10 kDa band of a **proteinic** or **glycoproteinic inhibitor** of a Xylanolytic enzyme. This band as well as two other bands were produced when the **xylanase inhibitor** was reduced with beta-mercaptoethanol and subjected to SDS-PAGE. The individual bands were then blotted and N-terminal sequenced. The second band has a molecular weight of 30 kDa and was found to have the same N-terminal sequence as the third band. The third band has a molecular weight of 40-43 kDa and its N-terminal sequence can be found in AAW86811. This **inhibitor** can be used in many applications including: the improvement of the malting of cereal, and/or the production of beer; the production and/or quality of baked or extruded cereal products; animal foodstuff

efficiency; the production of starch-derived syrups, sorbitol, xylose and/or xylitol; gluten-starch separation and production; plant disease resistance; maize processing; nutraceutical and pharmaceutical applications; and paper and pulp technologies.

L11 ANSWER 31 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAW86811 peptide DGENE
TITLE: Inhibitors of cellulolytic, xylanolytic or beta-glucanolytic enzymes - useful in the brewing, baking and paper and pulp industries
INVENTOR: Debyser W; Delcour J
PATENT ASSIGNEE: (LEUV-N) LEUVEN RES & DEV.
PATENT INFO: WO 9849278 A1 19981105 39p
APPLICATION INFO: WO 1998-EP2590 19980504
PRIORITY INFO: EP 1997-870060 19970430
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 1999-024051 [02]
AB This represents the N-terminal sequence of the 40-43 kDa band of a **proteinic** or **glycoproteinic inhibitor** of a Xylanolytic enzyme. This band as well as two other bands were produced when the **xylanase inhibitor** was reduced with beta-mercaptoethanol and subjected to SDS-PAGE. The individual bands were then blotted and N-terminal sequenced. The second band has a molecular weight of 30 kDa and was found to have the same N-terminal sequence. The third band has a molecular weight of 10 kDa and its N-terminal sequence can be found in AAW86812. This **inhibitor** can be used in many applications including: the improvement of the malting of cereal, and/or the production of beer; the production and/or quality of baked or extruded cereal products; animal foodstuff efficiency; the production of starch-derived syrups, sorbitol, xylose and/or xylitol; gluten-starch separation and production; maize processing; plant disease resistance; nutraceutical and pharmaceutical applications; and paper and pulp technologies.

L11 ANSWER 32 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAA47157 DNA DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N) DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence encodes a mutant endo-beta-1,4-**xylanase**. The specification also describes an endo-beta-1,4-**xylanase inhibitor**, which is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 33 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAA47156 DNA DGENE

TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence encodes a mutant endo-beta-1,4-**xylanase**. The specification also describes an endo-beta-1,4-**xylanase inhibitor**, which is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 34 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAA47155 DNA DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence encodes a mutant endo-beta-1,4-**xylanase**. The specification also describes an endo-beta-1,4-**xylanase inhibitor**, which is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 35 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAA47154 DNA DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N)DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217

PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence encodes an endo-beta-1,4-**xylanase**. The specification also describes an endo-beta-1,4-**xylanase** **inhibitor**, which is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 36 OF 37 DGENE COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: AAA47153 DNA DGENE
TITLE: Mutant **xylanase protein** identified using **xylanase inhibitor** useful for preparing non-sticky dough for bakery products -
INVENTOR: Sibbesen O; Sorensen J F
PATENT ASSIGNEE: (DANI-N) DANISCO AS.
PATENT INFO: WO 2000039289 A2 20000706 112p
APPLICATION INFO: WO 1999-IB2071 19991217
PRIORITY INFO: GB 1998-28599 19981223
GB 1999-7805 19990406
GB 1999-8645 19990415
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-465744 [40]
AB The present sequence encodes an endo-beta-1,4-**xylanase**. The specification also describes an endo-beta-1,4-**xylanase** **inhibitor**, which is obtained from wheat flour. The specification also describes a mutant **xylanase protein**. The **xylanase** is useful for preparing a foodstuff, preferably a bakery product or a substance (e.g. a dough) for making the bakery product. Wild type **xylanase** or mutant **xylanase** is useful for preparing a dough that is less sticky than a dough comprising a fungal **xylanase**. The **xylanase inhibitor** is useful for screening high degree resistance **xylanases** for dough preparation. The **xylanase** is also useful for preparing a non-sticky dough. A combination of **xylanase** and the **inhibitor** is useful for calibrating and/or determining the quantity of **inhibitor** in a wheat flour sample.

L11 ANSWER 37 OF 37 DPCI COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2000-173288 [16] DPCI
DOC. NO. NON-CPI: N2000-129014
DOC. NO. CPI: C2000-054033
TITLE: New **xylanase inhibiting** **protein** useful as stabilizers for xylan degrading enzymes applied in food, feed and nonfood as paper and pulp technology.
DERWENT CLASS: A96 D13 D16 F09 S03
INVENTOR(S): HAPPE, R P; HESSING, M
PATENT ASSIGNEE(S): (NEDE) NEDERLANDSE ORG TOEGEPAST
COUNTRY COUNT: 25
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG

EP 979830 A1 20000216 (200016)* EN 9
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 979830	A1	EP 1998-202704	19980812

PRIORITY APPLN. INFO: EP 1998-202704 19980812

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     (FILE 'HOME' ENTERED AT 16:16:11 ON 30 OCT 2001)

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L1             3 S XYLANASE/CN

     FILE 'HCAPLUS' ENTERED AT 16:18:33 ON 30 OCT 2001

     FILE 'REGISTRY' ENTERED AT 16:18:41 ON 30 OCT 2001
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L2           SEL L1 1- CHEM :      62 TERMS
                SET SMARTSELECT OFF

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L3          5111 S L2
L4            98 S L3 (L) (INHIBIT?) (L) (PROTEIN OR GLYCOPROTEIN?)
                E PLANT/CT
                E E3+ALL
L5            12 S L4 (L) (PLANT OR EMBRYOPHYTA)
L6             6 S L5 AND PD<19970430

     FILE 'CAPLUS' ENTERED AT 16:35:50 ON 30 OCT 2001

     FILE 'HCAPLUS' ENTERED AT 16:36:51 ON 30 OCT 2001
L7            17 S L4 (L) (CEREAL OR WHEAT OR RYE OR TRITICALE OR BARLEY OR SORG
L8             6 S L7 AND PD<19970430
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=> d ibib ab 1-6

L8 ANSWER 1 OF 6 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1999:587791 HCAPLUS
DOCUMENT NUMBER: 132:46668
TITLE: Purification and characterisation of a thermostable xylanase from a locally isolated Bacillus subtilis
AUTHOR(S): Saleem, Mahjabeen; Akhtar, Muhammad Saleem; Malik, Nadeem Nawazish; Akhtar, M. Waheed
CORPORATE SOURCE: Institute of Biochemistry and Biotechnology, University of the Punjab, Lahore, 54590, Pak.
SOURCE: Pak. J. Biochem. Mol. Biol. (**1997**), 30(1-2), 55-67
CODEN: PJBBF5
PUBLISHER: Pakistan Society of Biochemistry and Molecular Biology
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Bacillus subtilis was isolated from **wheat** straw compost by enrichment culture and serial diln. Cell growth and **xylanase** prodn. were maximal when Bacillus subtilis was grown on xylan at pH 6.0 after 10 h of fermn. at 50.degree.. Ammonium sulfate was the most efficient of all nitrogen sources tested, for cell growth and enzyme prodn. When the medium was supplemented with 0.25% sucrose, in addn. to 0.5% xylan, **xylanase** activity increased by more than 2 fold. The enzyme was purified 7.5 fold by chromatog. on Q-Sepharose, chromatofocusing and gel filtration on Sephadex G-75. This sample gave single **protein** band of approx. 22 kDa when subjected to SDS-PAGE. The purified enzyme showed a high specific activity of 1200 units/mg **protein**. The optimum pH and temp. for **xylanase** activity were 6.0 and 60.degree., resp. It was stable over the pH range 5.0-8.0. The enzyme was stable up to 60.degree. and lost about 30% activity when incubated at 70.degree. for two hours. Isoelec. point (pI) of the **xylanase** was about 9.0. The enzyme was significantly **inhibited** by Hg++ and Zn++ at a concn. of 2 mM, whereas Ca++ and Mg++ at the same concn. increased the activity by 40% and 30%, resp. Apparent values for Km and Vmax for **xylanase** at 60.degree. were 11.1 mg xylan/mL and 14.35 .mu.M sugars released/min, resp. The enzyme was specifically active on birchwood xylan and inactive on Avicel, starch, CMC, cellobiose and p-nitrophenyl xylopryranoside. In xylan hydrolysis by the enzyme tetra- and pentaoligosaccharides were the main products.
REFERENCE COUNT: 27
REFERENCE(S):
(1) Balakrishnan, H; J Microbiol Biotechnol 1992, V8, P627 HCAPLUS
(2) Bernier, R; Appl Environ Microbiol 1983, V46, P511 HCAPLUS
(4) Bragger, J; Appl Microbiol Biotechnol 1989, V31, P556 HCAPLUS
(6) Deshpande, M; Enz Microbiol Technol 1989, V11, P678 HCAPLUS
(7) Dey, D; Can J Microbiol 1992, V38, P436 HCAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 2 OF 6 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1997:272043 HCAPLUS
DOCUMENT NUMBER: 126:327257
TITLE: Purification, characterization, and properties of two xylanases from Humicola insolens
AUTHOR(S): Dusterhoft, E.-M.; Linssen, V. A. J. M.; Voragen, A. G. J.; Beldman, G.
CORPORATE SOURCE: Department of Food Chemistry and Microbiology, Agricultural University, Wageningen, 6700 EV, Neth.
SOURCE: Enzyme Microb. Technol. (**1997**), 20(6), 437-445
CODEN: EMTED2; ISSN: 0141-0229
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Two **endoxylanases** (EC 3.2.1.8), xyl1 and xyl2, were purified by subsequent anion-exchange, size-exclusion, and cation-exchange chromatog.

from a com. enzyme prepn. derived from the thermophilic fungus Humicola insolens. The homogeneous **proteins** had mol. masses of 6 and 21 kDa (SDS-PAGE) and isoelec. points of 9.0 and 7.7, resp. The low mol. wt. of xyl1 was confirmed by mass spectrometry. Both enzymes had similar pH and temp. optima (pH 6-6.5 and 55-60.degree.) but their stability at various pH and temps. differed. The molar activity towards xylans from beech, birch, larch, and arabinoxylans from **wheat** was higher for xyl2. Both **xylanases** had remarkably lower molar activities toward the isolated insol. fractions of these xylans or toward the essentially insol. beech xylan, but the decrease was relatively less pronounced with xyl2. These findings might be explained by differences in specific adsorption: xyl2 adsorbed strongly onto insol. beech xylan while the affinity of xyl1 was much lower. In contrast to xyl1, xyl2 was markedly **inhibited** by a no. of metal ions. The reaction products formed during hydrolysis of different xylans and the end products (xylobiose, xylotriose, minor amts. of monomeric xylose, and substituted [(4-o-methyl)glucurono]arabino-xylooligomers) were equal for both enzymes, but their relative proportions differed slightly.

L8 ANSWER 3 OF 6 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1996:466335 HCAPLUS
DOCUMENT NUMBER: 125:109873
TITLE: Production of .beta.-xylosidase activity by Trichoderma harzianum strains
AUTHOR(S): de A. Ximenes, Fabiano; de Paul Silveira, Quirino; Filho, Edivaldo Ximenes F.
CORPORATE SOURCE: Dep. Biologia Celular, Univ. Brasilia, Brasilia, 70910-900, Brazil
SOURCE: Curr. Microbiol. (**1996**), 33(2), 71-77
CODEN: CUMIDD; ISSN: 0343-8651
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Nine Trichoderma harzianum strains were screened for .beta.-xylosidase activity when grown in solid-state cultures on media contg. **wheat** bran as the carbon source. All strains produced .beta.-xylosidase activity, the most active being in exts. of cultures of T. harzianum strain 4. .beta.-Xylosidase was purified by ammonium sulfate pptn., ultrafiltration, gel filtration, and ion exchange chromatog. from solid-state cultures of T. harzianum strain C. Enzyme prepns. yielded a single band when stained for **protein** following electrophoresis. The mol. wt. value, calcd. following SDS-PAGE, was detd. to be 60 kDa. .beta.-Xylosidase was most active at pH 4.0-4.5 and 70.degree.C. This enzyme had a Km value of 0.053 mM. The phenol-sulfuric acid method detected the presence of a small amt. of carbohydrate in the purified enzyme prepn. .beta.-Xylosidase was active against some p-nitrophenylglycosides. The enzyme was inactive against xylan and PNPG. .beta.-Xylosidase activity was **inhibited** by xylose and SDS. Iodoacetamide, dithiothreitol, gluconolactone, glucose, and mercuric chloride failed to inactivate this enzyme's activity. A synergistic effect was obsd. when .beta.-xylosidase from T. harzianum strain C and .**beta**.-**xylanase** from Aspergillus fumigatus were incubated with pretreated arabinoxylan.

L8 ANSWER 4 OF 6 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1993:75892 HCAPLUS
DOCUMENT NUMBER: 118:75892
TITLE: Purification and general properties of xylanase from Aspergillus terreus
AUTHOR(S): Ghareib, Mohamed; Nour El Dein, Mahmoud M.
CORPORATE SOURCE: Fac. Educ., Ain Shams Univ., Cairo, Egypt
SOURCE: Zentralbl. Mikrobiol. (**1992**), 147(8), 569-76
CODEN: ZEMIDI; ISSN: 0232-4393
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A. terreus THOM produced appreciable amts. of **xylanase** on medium contg. acid-pretreated **rice** straw as sole C source. The enzyme was purified about 25-fold by ammoniums sulfate pptn., gel filtration through Sephadex G-50 and ion-exchange chromatog. on DEAE-cellulose with a yield of about 23% and specific activity of 15.38 units/mg **protein**

. Optimum activity against xylan was at 45.degree. and pH 4.5. Relative stability of the enzyme was recorded at pH 4-5.5. Heating the enzyme prepn. for 1 h at 60.degree. resulted in 82.61% loss of activity. After exposure to 90.degree. for 10 min, the **xylanase** retained 4.28% of its original activity. Purified enzyme lost 25% of the original activity after storage at 4.ANG. for 9 monthes in 0.05M acetate buffer (pH 4.5). The Km value of the enzyme was 0.83 mM. Zn2+ was the most enhancing agent for **xylanase**; Cu2+, followed by Co2+ and K+, were the most **inhibitory** cations. The **xylanase** was strongly **inhibited** by HgCl2, 2,4-dinitrophenol, phloridzin, and EDTA.

L8 ANSWER 5 OF 6 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1991:530464 HCAPLUS
DOCUMENT NUMBER: 115:130464
TITLE: Purification and cooperative activity of enzymes constituting the xylan-degrading system of Thermomonospora fusca
AUTHOR(S): Bachmann, Susan L.; McCarthy, Alan J.
CORPORATE SOURCE: Dep. Genet. Microbiol., Univ. Liverpool, Liverpool, L69 3BX, UK
SOURCE: Appl. Environ. Microbiol. (**1991**), 57(8), 2121-30
CODEN: AEMIDF; ISSN: 0099-2240
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The thermophilic actinomycete, T. fusca, produced **endoxylanase**, .alpha.-arabinofuranosidase, .beta.-xylosidase, and acetyl esterase activities maximally during growth on xylan. Growth yields on glucose, xylose, or arabinose were comparable, but prodn. of **endoxylanase** and .beta.-xylosidase was not induced on these substrates. The crude **xylanase** activity was thermostable and relatively resistant to end-product **inhibition** by xylobiose and xylan hydrolysis products. Six **proteins** with **xylanase** activity were identified by zymogram anal. of isoelec. focusing gels, but only a 23-kDa **protein** exhibiting 3 isomeric forms could be purified by fast-**protein** liq. chromatog. Endoglucanases were also identified in CM-cellulose-grown cultures, and their distinction from **endoxylanases** was confirmed. .alpha.-Arabinofuranosidase activity was due to a single dimeric **protein** of 92 kDa, which was particularly resistant to end-product **inhibition** by arabinose. Three bands of acetyl esterase activity were detected by zymogram anal., and there was evidence that these mainly consisted of an intracellular 80-kDa **protein** secreted to yield active 40-kDa subunits in the culture supernatant. The acetyl esterases were found to be responsible for acetyl xylan esterase activity in T. fusca, in contrast to the distinction proposed in some other systems. The addn. of purified .beta.-xylosidase to **endoxylanase** increased the hydrolysis of xylan, probably by relieving end-product **inhibition**. The enhanced saccharification of **wheat** straw caused by the addn. of purified .alpha.-arabinofuranosidase to T. fusca **endoxylanase** suggested a truly synergistic relation, in agreement with proposals that arabinose side-groups on the xylan chain participate in crosslinking within the plant cell wall structure.

L8 ANSWER 6 OF 6 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1990:475085 HCAPLUS
DOCUMENT NUMBER: 113:75085
TITLE: Host-pathogen interactions. XXXVI. Partial purification and characterization of heat-labile molecules secreted by the rice blast pathogen that solubilize plant cell wall fragments that kill plant cells
AUTHOR(S): Bucheli, P.; Doares, S. H.; Albersheim, P.; Darvill, A.
CORPORATE SOURCE: Complex Carbohydrate Res. Cent., Univ. Georgia, Athens, GA, 30602, USA
SOURCE: Physiol. Mol. Plant Pathol. (**1990**), 36(2), 159-73

CODEN: PMPPEZ; ISSN: 0885-5765
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Heat-labile factors capable of killing plant cells are secreted by the **rice** pathogen Magnaporthe grisea when grown on **rice** cell walls. **Inhibition** of [14C]-leucine incorporation into **maize** cell (Zea mays cv. Black Mexican Sweet) was shown to be as reliable as the vital dyes 2,3,5-triphenyltetrazolium chloride and fluorescein diacetate for assessing cell viability. The heat-labile factors responsible for killing plant cells were partially purified by CM-Sephadex and Superose 12 chromatog. A combination of four of the Superose 12 column fractions synergistically killed the plant cells; the killing activity of the combined fractions was 2.5 times as high as that obtained by the sum of the four fractions assayed individually. Pectin lyase (PL), pectin methylesterase (PME), and **xylanase** were purified to apparent homogeneity from the fungal culture filtrate. When these enzymes were tested in various combinations and at the same concns. as they were found in the culture filtrate, they did not kill plant cells. The same enzymes were not able to release fragments that killed plant cells from isolated **maize** cell walls, whereas fractions contg. the partially purified heat-labile killing activity rapidly released heat-stable **maize** cell wall fragments that killed **maize** cells. Thus, a heat-labile killing activity secreted by M. grisea, which probably consists of two or more factors (presumably **proteins**), solubilizes from **maize** cell walls heat-stable fragments (presumably carbohydrates) that kill **maize** cells. Furthermore, although pectic enzymes may prove to be necessary for killing, the pectic enzymes in the culture filtrate of M. grisea do not, by themselves, kill **maize** cells.

L6 ANSWER 1 OF 6 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1995:297322 HCAPLUS
DOCUMENT NUMBER: 122:103991
TITLE: A thermostable xylanase from Clostridium thermocellum expressed at high levels in the apoplast of transgenic tobacco has no detrimental effects and is easily purified
AUTHOR(S): Herbers, K.; Wilke, I.; Sonnewald, U.
CORPORATE SOURCE: Institut Pflanzengenetik Kulturpflanzenforschung, Gatersleben, Germany
SOURCE: Bio/Technology (**1995**), 13(1), 63-6
CODEN: BTCHDA; ISSN: 0733-222X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A truncated version of the C. thermocellum **xylanase** (xynZ) gene was expressed in transgenic tobacco **plants**. High levels of the 37-kD **protein** were synthesized and correctly targeted to the intercellular space by means of the proteinase **inhibitor** II signal peptide. The **protein** was one of the most abundant **proteins** in total exts. that were not protected against proteolysis. Enzyme extd. from leaves retained its activity and hydrolyzed xylan efficiently to xylo-oligomers and xylose. Enzymic activity could be enriched about 14 to 31-fold after heat treatment, with essentially complete recovery. The transgenic **plants**, grown under greenhouse conditions, were not affected by the foreign enzyme, possibly due to the high temp. optimum (70.degree.) of the **xylanase** and low levels of xylan in dicotyledons. These **plants** might be useful for prodn. of the enzyme, which has many applications in the paper industry and in agriculture.

L6 ANSWER 2 OF 6 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1994:129747 HCAPLUS
DOCUMENT NUMBER: 120:129747
TITLE: Specific perception of subnanomolar concentrations of chitin fragments by tomato cells: induction of extracellular alkalinization, changes in protein phosphorylation, and establishment of a refractory state
AUTHOR(S): Felix, Georg; Regenass, Martin; Boller, Thomas
CORPORATE SOURCE: Friedrich Miescher-Inst., Basel, CH-4002, Switz.
SOURCE: Plant J. (**1993**), 4(2), 307-16
CODEN: PLJUED; ISSN: 0960-7412
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Suspension-cultured tomato cells respond to yeast cell wall prepns. with a rapid, transient alkalinization of the culture medium. Depending on the dose of the stimulus, the pH starts to increase after a lag period of about 0.5-2 min and reaches a transient max., up to 0.6 pH units above the initial value, after 2-4 min. Using this alkalinization response as a rapid and convenient assay, a sensitive perception system for small chitin fragments was revealed in the tomato cells. Chitin oligomers with four or more N-acetylglucosamine residues stimulated the alkalinization response significantly at concns. below 10 pM and half-maximally at concns. of 100 pM. About 10,000-fold higher concns. of the trimer, N,N',N''-triacetylchitotriose, were required to elicit similar responses. For up to 8 h after a first treatment with 10 nM of the tetramer, N,N',N'',N'''-tetraacetyl-chitotetraose, cells did not respond to a second stimulation with any of the chitin fragments. Throughout this refractory period, however, cells remained fully responsive to prepns. of fungal **xylanase**, another stimulus which induces a more permanent alkalinization after a lag phase of more than 2 min. The alkalinization response to these two qual. different stimuli was paralleled by the same characteristic changes in the pattern of **protein** phosphorylation, detected by in vivo pulse-labeling with [32P]phosphate for 30 s. The onset of the alkalinization and of the changes in **protein** phosphorylation coincided in both cases, and both phenomena were blocked by the **protein** kinase **inhibitor** K-252a. Although the mechanism underlying the extracellular pH increase is unknown, activation of the alkalinization response provides a sensitive

and convenient assay to investigate early events in chemoperception of microbial signals by **plant** cells.

L6 ANSWER 3 OF 6 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1993:577635 HCAPLUS
DOCUMENT NUMBER: 119:177635
TITLE: Ethylene signal is transduced via protein phosphorylation events in plants
AUTHOR(S): Raz, Vered; Fluhr, Robert
CORPORATE SOURCE: Dep. Plant Genet., Weizmann Inst. Sci., Rehovot, 76100, Israel
SOURCE: Plant Cell (**1993**), 5(5), 523-30
CODEN: PLCEEW; ISSN: 1040-4651
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A plethora of abiotic and biotic environmental stresses exert their influence on **plants** via the gaseous hormone ethylene. In addn., aspects of **plant** development and climacteric fruit ripening are regulated by ethylene. Sensitivity to ethylene is presumably mediated by a specific ethylene receptor whose activation signal is then transduced via an unknown cascade pathway. The **plant** pathogenesis response, exemplified by the induction of pathogenesis-related (PR) genes, was used as a paradigm to investigate ethylene-dependent signal transduction in the **plant** cell. Ethylene application induced very rapid and transient **protein** phosphorylation in tobacco leaves. In the presence of the kinase **inhibitors** H-7 and K-252a, the transient rise in phosphorylation and the induced expression of PR genes were abolished. Similarly, these **inhibitors** blocked the response induced by an ethylene-dependent elicitor, .alpha.-AB. Reciprocally, application of okadaic acid, a specific **inhibitor** of phosphatases type 1 and type 2A, enhanced total **protein** phosphorylation and by itself elicited the accumulation of PR **proteins**. In the presence of H-7 and K-252a, PR **protein** accumulation induced by okadaic acid was blocked. In contrast to the action of ethylene and .alpha.-AB, **xylanase** elicits the accumulation of PR **protein** by an ethylene-independent pathway. **Xylanase**-induced PR **protein** accumulation was not affected by H-7 and K-252a. Thus, the responsiveness to ethylene in leaves is transduced via putative phosphorylated intermediates that are regulated by specific kinases and phosphatases.

L6 ANSWER 4 OF 6 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1993:405063 HCAPLUS
DOCUMENT NUMBER: 119:5063
TITLE: Pathogenesis-related proteins exhibit both pathogen-induced and developmental regulation
AUTHOR(S): Fluhr, R.; Sessa, G.; Sharon, A.; Ori, N.; Lotan, T.
CORPORATE SOURCE: Dep. Plant Genet., Weizmann Inst. Sci., Rehovot, 76100, Israel
SOURCE: Curr. Plant Sci. Biotechnol. Agric. (**1991**), 10(Adv. Mol. Genet. Plant-Microbe Interact., Vol. 1), 387-94
CODEN: CPBAE2
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Antisera to acidic isoforms of pathogenesis-related (PR) **proteins** were used to measure the activity of these genes in tobacco **plants**. A novel **endo-(1-4)-.beta.-xylanase** purified from fungal filtrates of Trichoderma viride was found to be a strong activator of PR **proteins** synthesis in tobacco leaves. The induction was not **inhibited** by blockers of either ethylene biosynthesis or ethylene action highlighting a novel ethylene independent pathway for PR **proteins**. Concomitant with the induction of PR **proteins** phytoalexins are induced. The regulation of the phytoalexin capsidiol showed identical ethylene dependent and independent pathways described for PR **proteins**. In addn. to the pathogen-induced regulation obsd. in leaves, PR **proteins** accumulate in developing flower organs in a unique spatial and developmental pattern. Antiserum raised against the leaf

pathogen induced (1-3)-.beta.-glucanases cross reacts with a stylar specific **protein** of apparent mol. wt. of 41kD (sp41). Sp41 polypeptide was purified and found to have (1-3)-.beta.-glucanase activity. Some cDNA clones corresponding to sp41 mRNA were isolated and sequenced. The cDNA clones show 52-82% homol. with the different acidic secreted (1-3)-.beta.-glucanases from leaves, and represent distinct genes. The differential appearance of PR **proteins** during flower development, their in situ localization and post-translational processing point to alternate biol. functions.

L6 ANSWER 5 OF 6 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1991:530464 HCAPLUS
DOCUMENT NUMBER: 115:130464
TITLE: Purification and cooperative activity of enzymes constituting the xylan-degrading system of Thermomonospora fusca
AUTHOR(S): Bachmann, Susan L.; McCarthy, Alan J.
CORPORATE SOURCE: Dep. Genet. Microbiol., Univ. Liverpool, Liverpool, L69 3BX, UK
SOURCE: Appl. Environ. Microbiol. (**1991**), 57(8), 2121-30
CODEN: AEMIDF; ISSN: 0099-2240
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The thermophilic actinomycete, T. fusca, produced **endoxylanase**, .alpha.-arabinofuranosidase, .beta.-xylosidase, and acetyl esterase activities maximally during growth on xylan. Growth yields on glucose, xylose, or arabinose were comparable, but prodn. of **endoxylanase** and .beta.-xylosidase was not induced on these substrates. The crude **xylanase** activity was thermostable and relatively resistant to end-product **inhibition** by xylobiose and xylan hydrolysis products. Six **proteins** with **xylanase** activity were identified by zymogram anal. of isoelec. focusing gels, but only a 23-kDa **protein** exhibiting 3 isomeric forms could be purified by fast-**protein** liq. chromatog. Endoglucanases were also identified in CM-cellulose-grown cultures, and their distinction from **endoxylanases** was confirmed. .alpha.-Arabinofuranosidase activity was due to a single dimeric **protein** of 92 kDa, which was particularly resistant to end-product **inhibition** by arabinose. Three bands of acetyl esterase activity were detected by zymogram anal., and there was evidence that these mainly consisted of an intracellular 80-kDa **protein** secreted to yield active 40-kDa subunits in the culture supernatant. The acetyl esterases were found to be responsible for acetyl xylan esterase activity in T. fusca, in contrast to the distinction proposed in some other systems. The addn. of purified .beta.-xylosidase to **endoxylanase** increased the hydrolysis of xylan, probably by relieving end-product **inhibition**. The enhanced saccharification of wheat straw caused by the addn. of purified .alpha.-arabinofuranosidase to T. fusca **endoxylanase** suggested a truly synergistic relation, in agreement with proposals that arabinose side-groups on the xylan chain participate in crosslinking within the **plant** cell wall structure.

L6 ANSWER 6 OF 6 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1990:475085 HCAPLUS
DOCUMENT NUMBER: 113:75085
TITLE: Host-pathogen interactions. XXXVI. Partial purification and characterization of heat-labile molecules secreted by the rice blast pathogen that solubilize plant cell wall fragments that kill plant cells
AUTHOR(S): Bucheli, P.; Doares, S. H.; Albersheim, P.; Darvill, A.
CORPORATE SOURCE: Complex Carbohydrate Res. Cent., Univ. Georgia, Athens, GA, 30602, USA
SOURCE: Physiol. Mol. Plant Pathol. (**1990**), 36(2), 159-73
CODEN: PMPPEZ; ISSN: 0885-5765
DOCUMENT TYPE: Journal

LANGUAGE: English

AB Heat-labile factors capable of killing **plant** cells are secreted by the rice pathogen Magnaporthe grisea when grown on rice cell walls. **Inhibition** of [14C]-leucine incorporation into maize cell (Zea mays cv. Black Mexican Sweet) was shown to be as reliable as the vital dyes 2,3,5-triphenyltetrazolium chloride and fluorescein diacetate for assessing cell viability. The heat-labile factors responsible for killing **plant** cells were partially purified by CM-Sephadex and Superose 12 chromatog. A combination of four of the Superose 12 column fractions synergistically killed the **plant** cells; the killing activity of the combined fractions was 2.5 times as high as that obtained by the sum of the four fractions assayed individually. Pectin lyase (PL), pectin methylesterase (PME), and **xylanase** were purified to apparent homogeneity from the fungal culture filtrate. When these enzymes were tested in various combinations and at the same concns. as they were found in the culture filtrate, they did not kill **plant** cells. The same enzymes were not able to release fragments that killed **plant** cells from isolated maize cell walls, whereas fractions contg. the partially purified heat-labile killing activity rapidly released heat-stable maize cell wall fragments that killed maize cells. Thus, a heat-labile killing activity secreted by M. grisea, which probably consists of two or more factors (presumably **proteins**), solubilizes from maize cell walls heat-stable fragments (presumably carbohydrates) that kill maize cells. Furthermore, although pectic enzymes may prove to be necessary for killing, the pectic enzymes in the culture filtrate of M. grisea do not, by themselves, kill maize cells.

ACCESSION NUMBER: **1997:713005** HCAPLUS
DOCUMENT NUMBER: 128:22088
TITLE: Arabinoxylan solubilization and inhibition of the barley malt xylanolytic system by wheat during mashing with wheat wholemeal adjunct: evidence for a new class of enzyme inhibitors in wheat
AUTHOR(S): Debyser, Winok; Derdelinckx, Guy; Delcour, Jan A.
CORPORATE SOURCE: Lab. Food Chemistry, Katholieke Univ. Leuven, B-3001, Belg.
SOURCE: J. Am. Soc. Brew. Chem. (1997), 55(4), 153-156
CODEN: JSBCD3; ISSN: 0361-0470
PUBLISHER: American Society of Brewing Chemists, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
CLASSIFICATION: 17-13 (Food and Feed Chemistry)
ABSTRACT:
Three EBC worts were made with 100% barley malt and eight with 60% barley malt and 40% wheat, of which two had addns. of a Bacillus subtilis endoxylanase. The xylose (Xyl) levels of centrifuged wort (indicative of arabinoxylan levels) made from 100% barley malt were 0.46, 0.70, and 0.55% (% dry matter), while the corresponding malt water-extd. Xyl content were 0.31, 0.44, and 0.41%. The Xyl levels in centrifuged worts from 60% barley malt and 40% wheat (0.37-0.58%) depended mainly on the water-extractable arabinoxylan content of the starting material. The endoxylanolytic levels of the malts had only minor effect on the resulting Xyl contents of the worts. The increase of Xyl levels during mashing with 40% wheat (0.05-0.10%) were 12-58% lower than 60% of the increase in Xyl with a corresponding 100% malt wort. The addn. of the endoxylanase from B. subtilis increased the centrifuged wort Xyl level. Expts. in which the endoxylanolytic activity of malt exts. was measured in the presence of wheat water-extractable provided evidence for the presence of one or more endoxylanase inhibitors in wheat that are inactivated by heat treatment. The wheat inhibitors however did not inactivate the B. subtilis endoxylanase.

SUPPL. TERM: endoxylanase inhibitor wheat barley malt beer
INDEX TERM: Barley
Beer
Brewing
Malt
Wheat
Worts
(arabinoxylan solubilization and inhibition of the barley malt xylanolytic system by wheat during mashing with wheat wholemeal adjunct)
INDEX TERM: 9025-53-0, E.C. 3.2.1.37 9025-57-4, E.C. 3.2.1.8
ROLE: BAC (Biological activity or effector, except adverse); BIOL (Biological study)
(arabinoxylan solubilization and inhibition of the barley malt xylanolytic system by wheat during mashing with wheat wholemeal adjunct)
INDEX TERM: 58-86-6, D-Xylose, biological studies
ROLE: BOC (Biological occurrence); BIOL (Biological study); OCCU (Occurrence)
(arabinoxylan solubilization and inhibition of the barley malt xylanolytic system by wheat during mashing with wheat wholemeal adjunct)

L1 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1998:728536 HCAPLUS
DOCUMENT NUMBER: 130:1779
TITLE: Inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications
INVENTOR(S): Debyser, Winok; Delcour, Jan
PATENT ASSIGNEE(S): K.U. Leuven Research & Development, Belg.
SOURCE: PCT Int. Appl., 39 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
INT. PATENT CLASSIF.:
MAIN: C12N009-24
SECONDARY: A23L001-185; A23L001-10; C07K014-415
CLASSIFICATION: 7-3 (Enzymes)
Section cross-reference(s): 11, 17, 33, 43
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9849278	A1	19981105	WO 1998-EP2590	19980504 <--
W: AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GE, GW, HU, ID, IL, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, US, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9877611	A1	19981124	AU 1998-77611	19980504
EP 996709	A1	20000503	EP 1998-925518	19980504
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
BR 9809348	A	20000704	BR 1998-9348	19980504

PRIORITY APPLN. INFO.: EP 1997-870060 A 19970430
WO 1998-EP2590 W 19980504

ABSTRACT:
The present invention concerns an inhibitor of xylanolytic and/or .beta.-glucanolytic enzymes. Methods are also described for the isolation of the inhibitors. Furthermore, methods for increasing or decreasing the activity of the inhibitor are discussed. Uses of the inhibitors are also described, including applications in the areas of food, feed or beverage technologies. These applications include malting and brewing, improving animal feedstuffs, and baked or extruded cereal products.

SUPPL. TERM: enzyme cellulolytic xylanolytic glucanolytic inhibitor
INDEX TERM: Enzymes, biological studies
ROLE: BAC (Biological activity or effector, except adverse); BPR (Biological process); FFD (Food or feed use); BIOL (Biological study); PROC (Process); USES (Uses)
(arabinoxylan-degrading; inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)
INDEX TERM: Flours and Meals
Malt
(barley; inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)
INDEX TERM: Proteins (specific proteins and subclasses)
ROLE: BAC (Biological activity or effector, except adverse); BPR (Biological process); FFD (Food or feed use); BIOL (Biological study); PROC (Process); USES (Uses)
(cellulolytic or xylanolytic or glucanolytic enzyme-inhibiting; inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)
INDEX TERM: Glycoproteins (specific proteins and subclasses)
ROLE: BAC (Biological activity or effector, except adverse); BPR (Biological process); FFD (Food or feed use); BIOL (Biological study); PROC (Process); USES (Uses)

(cellulolytic or xylanolytic or .beta.-glucanolytic enzyme-inhibiting; inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

INDEX TERM: Enzymes, biological studies
ROLE: BAC (Biological activity or effector, except adverse); BPR (Biological process); FFD (Food or feed use); BIOL (Biological study); PROC (Process); USES (Uses)
(cellulolytic; inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

INDEX TERM: Wheat flour
(durum; inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

INDEX TERM: Barley
Oat
(flour; inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

INDEX TERM: Syrups (sweetening agents)
(hydrolyzed starch; inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

INDEX TERM: Barley
Beer
Biscuits
Bread
Breakfast cereal
Cellulose pulp
Cereal (grain)
Corn
Corn flour
Disease resistance (plant)
Diseases (plant)
Dough
Drugs
Durum wheat
Feed
Flours and Meals
Gene expression
Malting
Microorganism
Oat
Paper
Pasta
Plant (Embryophyta)
Protein sequences
Rice (Oryza sativa)
Rice flour
Rye
Rye flour
Sorghum
Transcription (genetic)
Transformation (genetic)
Translation (genetic)
Triticale
Wheat
Wheat flour
Wheat germ
(inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

INDEX TERM: Flours and Meals
(oat flour; inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

INDEX TERM: Glutens
ROLE: BPR (Biological process); FFD (Food or feed use); BIOL (Biological study); PROC (Process); USES (Uses)
(wheat; inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

INDEX TERM: Enzymes, biological studies
ROLE: BAC (Biological activity or effector, except adverse);

BPR (Biological process); FFD (Food or feed use); BIOL (Biological study); PROC (Process); USES (Uses)
(xylan-hydrolyzing; inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

INDEX TERM: Enzymes, biological studies
ROLE: BAC (Biological activity or effector, except adverse); BPR (Biological process); FFD (Food or feed use); BIOL (Biological study); PROC (Process); USES (Uses)
(.beta.-glucanolytic; inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

INDEX TERM: 9012-54-8, Cellulase 9025-57-4 9067-74-7, .alpha.-L-Arabinofuranosidase 37278-89-0, Xylanase 37288-51-0, Lichenase 53362-87-1, .beta.-Xylosidase
ROLE: BAC (Biological activity or effector, except adverse); BPR (Biological process); FFD (Food or feed use); BIOL (Biological study); PROC (Process); USES (Uses)
(inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

INDEX TERM: 50-70-4P, Sorbitol, biological studies 58-86-6P, D-Xylose, biological studies 87-99-0P, Xylitol
ROLE: BPN (Biosynthetic preparation); BPR (Biological process); FFD (Food or feed use); BIOL (Biological study); PREP (Preparation); PROC (Process); USES (Uses)
(inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

INDEX TERM: 9005-25-8P, Starch, biological studies
ROLE: BPN (Biosynthetic preparation); BPR (Biological process); FFD (Food or feed use); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation); PROC (Process); USES (Uses)
(inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

INDEX TERM: 9004-34-6, Cellulose, biological studies 9014-63-5, Xylan 9040-27-1, Arabinoxylan 9041-22-9, .beta.-Glucan
ROLE: BPR (Biological process); FFD (Food or feed use); BIOL (Biological study); PROC (Process); USES (Uses)
(inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

INDEX TERM: 215726-19-5 215726-20-8
ROLE: BSU (Biological study, unclassified); FFD (Food or feed use); PRP (Properties); BIOL (Biological study); USES (Uses)
(inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

REFERENCE COUNT: 8

REFERENCE(S):

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File 440:Current Contents Search(R) 1990-2002/Jul 09
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?ds

Set     Items   Description
S1        845   (XYLANASE? OR ENDOXYLANASE OR  ARIBINOXYLAN?) (S) INHIBIT?
                AND (PROTEIN? OR GLYCOPROTEIN?)
S2        434   RD (unique items)
S3        173   (CEREAL? OR WHEAT? OR FLOUR? OR RYE? OR TRITICALE? OR BARL-
                EY? OR SORGHUM? OR OAT? OR CORN? OR MAIZE? OR RICE OR GRAIN? -
                OR PLANT?) AND S2
S4        131   S3 AND (PREPAR? OR PREPN OR EXTRACT? OR EXTN OR HOMOGEN? OR
                PRODUCT? OR SEPARAT? OR SEPN OR PURIF?)
S5          6   S4 (S)(WATER OR H2O)(W)SOLUB?
?t5/3 ab/1-6

 5/AB/1     (Item 1 from file: 34)
DIALOG(R)File  34:SciSearch(R) Cited Ref Sci
(c) 2002 Inst for Sci Info. All rts. reserv.

05416773   Genuine Article#: VX271   Number of References: 29
Title: PINE SUBSTRATE SPECIFICITIES OF 4 EXO-TYPE CELLULASES PRODUCED BY
    ASPERGILLUS-NIGER, TRICHODERMA-REESEI, AND IRPEX-LACTEUS ON
    (1->3),(1->4)-BETA-D-GLUCANS AND XYLOGLUCAN  (Abstract Available)
Author(s): AMANO Y; SHIROISHI M; NISIZAWA K; HOSHINO E; KANDA T
Corporate Source: SHINSHU UNIV,FAC ENGN,DEPT CHEM & MAT ENGN,WAKASATO
    500/WAKASATO/NAGANO 380/JAPAN/; NIHON UNIV,COLL BIORESOURCE
    SCI,SETAGAYA KU/TOKYO 154//JAPAN/; KAO CORP,TOCHIGI RES
    LABS/HAGA/TOCHIGI 32134/JAPAN/
Journal: JOURNAL OF BIOCHEMISTRY, 1996, V120, N6 (DEC), P1123-1129
ISSN: 0021-924X
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Language: ENGLISH Document Type: ARTICLE
Abstract: To investigate the fine substrate specificities of four highly purified exo-type cellulases (Exo-A from Aspergillus niger, CBHI and CBHII from Trichoderma reesei, and Ex-1 from Irpex lacteus), water - soluble substrates such as barley glucan, xyloglucan from tamarind (Tamarindus indica L.), and their oligosaccharides were employed, Four exo-type cellulases immediately hydrolyzed 3-O-beta-D-cellotriosylglucose to produce cellobiose and laminaribiose. In contrast, CBHII showed no hydrolytic activity towards 3(2)-O-beta-D-cellobiosylcellobiose, which was hydrolyzed to cellobiose by the other exo-type cellulases. These cellulases hydrolyzed the internal linkages of barley glucan and lichenan in an endo-type fashion to produce cellobiose and mix-linked oligosaccharides as main products , The DP-lowering activities of the four exo-type cellulases on barley glucan were in the order of Ex-1, CBHII, Exo-A, and CBHI. Based on gel permeation chromatography analysis of the hydrolysates, Ex-1 seemed to attack the internal cellobiosyl unit adjacent to beta-1,3-glucosidic linkages in barley glucan molecule more frequently than did the other cellulases. Xyloglucan was hydrolyzed only by CBHI and CBHII, and produced hepta-, octa-, and nona-saccharides. In addition, a xyloglucan tetradecasaccharide (XG14) was split only to heptasaccharide (XG7) by CBHI and CBHII.

5/AB/2 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

05075716 Genuine Article#: TN905 Number of References: 52
Title: EFFECTS OF SUBSTITUTION SITE ON ACETYL AMYLOSE BIODEGRADABILITY BY AMYLASE ENZYMES (Abstract Available)
Author(s): ROESSER DS; MCCARTHY SP; GROSS RA; KAPLAN DL
Corporate Source: UNIV LOWELL,BIODEGRADABLE POLYMER RES CTR,1 UNIV AVE/LOWELL//MA/01854; UNIV LOWELL,BIODEGRADABLE POLYMER RES CTR/LOWELL//MA/01854; USA,NATICK RES DEV & ENGN CTR,DIV BIOTECHNOL/NATICK//MA/01760
Journal: MACROMOLECULES, 1996, V29, N1 (JAN 1), P1-9
ISSN: 0024-9297
Language: ENGLISH Document Type: ARTICLE
Abstract: The site-selective syntheses of water soluble (6-O)- and (2-O/3-O)-acetyl amylose polymers (substituted at primary and secondary hydroxyl functionalities, respectively) were carried out. On the basis of H-1 NMR analyses regiospecificities of >95% were achieved. In addition, routine chemical methods which did not employ protection-deproteetion steps provided water soluble (2-O/3-O/6-O)-acetyl amylose polymers. To maintain water solubility , the polymer degree of substitution (ds) was maintained at <0.70. The biodegradation characteristics of these products as a function of site and ds were studied by exposures to the a-amylases from Bacillus subtilis, Bacillus licheniformis, and Aspergillus oryzae. Quantitation of the biodegradation rate and percent were carried out using the dinitrosalicylic acid (DNS) reducing sugar assay. Common to all three alpha-amylases was that these enzymes degraded (2-O/3-O)-acetyl amylose polymers much more rapidly and to greater extents than (6-O)-acetyl amylose derivatives of similar ds's and molecular weights (M(v)). The rate of and percent degradation of (2-O/3-O/6-O)-acetyl amylose polymers was intermediate to that of(2-O/3-O)- and (6-O)-acetyl amylose polymers. Thus, the importance of site of substitution on the biodegradability of acetyl amylose polymers was demonstrated. Interestingly, when low ds (similar to 0.20) acetyl amylose polymers were exposed to the exoglycosidase from sweet potatoes (beta-amylase),

Little to no polymer degradation was observed. This is believed to result from the rapid formation of substituted chain ends that are not degraded by the beta-amylase, thus terminating further chain degradation events.

5/AB/3 (Item 3 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

02266850 Genuine Article#: KP535 Number of References: 35
Title: PURIFICATION AND CHARACTERIZATION OF 3 ENDO-(1,4)-BETA-XYLANASES AND ONE BETA-XYLOSIDASE FROM ASPERGILLUS-AWAMORI (Abstract Available)
Author(s): KORMELINK FJM; SEARLEVANLEEUWEN MJE; WOOD TM; VORAGEN AGJ
Corporate Source: AGR UNIV WAGENINGEN,DEPT FOOD SCI,BOMENWEG 2/6703 HD WAGENINGEN//NETHERLANDS/; AGR UNIV WAGENINGEN,DEPT FOOD SCI,BOMENWEG 2/6703 HD WAGENINGEN//NETHERLANDS/; ROWETT RES INST/BUCKSBURN AB2 9SB/ABERDEEN/SCOTLAND/
Journal: JOURNAL OF BIOTECHNOLOGY, 1993, V27, N3 (FEB), P249-265
ISSN: 0168-1656
Language: ENGLISH Document Type: ARTICLE
Abstract: Three endo-(1,4)-beta- xylanases (endo- xylanase I, II, and III) and one beta-D-xyloside xylohydrolase (beta-xylosidase) were purified from a crude culture filtrate of Aspergillus awamori CMI 142717, grown on milled oat straw as carbon source. Aspergillus awamori xylanases differ in some characteristics of known xylanases . The optimum pH for the endo- xylanases were between 4.0 and 5.5 and the optimum temperature between 45-degrees-C and 55-degrees-C; beta-xylosidase was optimal around pH 6.5 and 70-degrees-C. All endo-xylanases were able to degrade xylan to xylobiose and xylotriose. Endo- xylanase I also produced small amounts of xylose. The molecular weights of endo- xylanase I, II, and III were, respectively, 39000, 23000, and 26000. The molecular weight of beta-xylosidase was 110000. The specific activities of endo- xylanase I, II, and III towards water - soluble oat spelts arabinoxylan were, respectively, 69.6 U mg-1, 68.6 U mg-1, and 16.3 U mg-1. The specific activity of beta-xylosidase towards p-nitrophenyl-beta-xylopyranoside was 34.1 U mg-1. The activity of these enzymes was significantly inhibited by Hg2+, Pb2+, and Ag+.

5/AB/4 (Item 1 from file: 351)
DIALOG(R)File 351:Derwent WPI

014293877
WPI Acc No: 2002-114579/200215
XRAM Acc No: C02-035292
Separating and/or isolating inhibitors of cellulolytic, xylanolytic, or beta-glucanolytic enzymes comprises using endoxylanases during screening for inhibition activity or affinity chromatography with immobilized enzymes
Patent Assignee: LEUVEN RES & DEV (LEUV-N)
Inventor: DEBYSER W; DELCOUR J; FIERENS K; GEBRUERS K; GOESAERT H; ROBBEN J ; VAN CAMPENHOUT S
Number of Countries: 095 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200198474	A1	20011227	WO 2001BE106	A	20010621	200215	B
AU 200168853	A	20020102	AU 200168853	A	20010621	200230	

Priority Applications (No Type Date): GB 200112328 A 20010521; GB 200015296 A 20000622; GB 20012018 A 20010125; GB 20012194 A 20010126; GB 20016564 A 20010316
Patent Details:
Patent No Kind Lan Pg Main IPC Filing Notes
WO 200198474 A1 E 128 C12N-009/42
Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
AU 200168853 A C12N-009/42 Based on patent WO 200198474

Abstract (Basic): WO 200198474 A1
Abstract (Basic):
NOVELTY - Separating and/or isolating (M) inhibitors of cellulolytic, xylanolytic and/or beta-glucanolytic enzymes comprises screening the inhibition activity by using two or more enzymes during the separation and/or isolation steps that allow to distinguish inhibitors of different specificity or by using an affinity chromatographic step with immobilized enzymes and/or antibodies against inhibitors.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) an isolated nucleic acid molecule (I) encoding an inhibitor which inhibits cellulase, endoxylanase, beta-glucanase, beta-xylosidase, alpha-L-arabino-furanosidase and/or other cellulose, xylan, arabinoxylan or beta-glucan degrading enzymes;

(2) a recombinant DNA construct comprising (I);

(3) a transcribed RNA product of (I);

(4) an RNA molecule or its fragment which is antisense in relation to the (3) and is capable of hybridizing to it;

(5) a vector comprising (I);

(6) an expression system (II) transformed with (I);

(7) a host organism (III) transformed with (I);

(8) a recombinant protein, glycoprotein or polypeptide (IV) or a fragment of them, which is an inhibitor encoded by (I) or produced by transforming microorganisms, plant tissues or cells using (I);

(9) an isolated antibody or its fragment that specifically binds to (IV);

(10) a compound that modulates (IV);

(11) a polynucleotide probe or primer comprising at least 15 contiguous nucleotides of (I);

(12) a proteinic or glycoproteinic inhibitor (V) of cellulolytic, xylanolytic and/or beta-glucanolytic enzymes, obtainable by (M); and

(13) a preparation (VI) containing the xylanase inhibitor ligands depleted fraction obtainable using (IV) or (V).

ACTIVITY - None given.

MECHANISM OF ACTION - Cellulolytic, xylanolytic and/or beta-glucanolytic enzyme inhibitor. No suitable biological data is given.

USE - (M) is useful for separating and/or isolating inhibitors of cellulolytic, xylanolytic and/or beta-glucanolytic enzymes which are present in microorganisms, plants, plant materials or their fractions. A nucleic acid (I) is useful for modulating the activity of the inhibitor of cellulase, endoxylanase, beta-glucanase, beta-xylosidase, alpha-L-arabino-furanosidase and/or other cellulose, xylan, arabinoxylan or beta-glucan degrading enzymes, by transforming microorganisms, plants tissues or plant cells with (I) which blocks or activates the inhibitor function. A recombinant protein, glycoprotein

or polypeptide (IV) or microorganisms, plant or plant materials transformed with (I) are useful for:

(a) formation of an endoxylanase-inhibitor complex, where the inhibitor mimics the normal substrate or binds in a way that it does not prevent binding of the normal substrate;

(b) screening endoxylanases that are totally, less or not inhibited by the inhibitors or for modifying endoxylanases in such a way that they are totally, less or not inhibited by the inhibitors;

(c) reducing syruping in refrigerated dough compositions comprising flour and water;

(d) affecting the relative affinity and/or relative hydrolysis specificity and/or relative hydrolysis rate versus water-extractable and/or water-unextractable arabinoxylans of endoxylanases such as by the formation of an endoxylanase/inhibitor complex;

(e) improving the malting of cereals such as barley, sorghum and wheat and/or the production of beer;

(f) improving the production and/or quality of baked or extruded cereal products such as straight dough, sponge dough, Chorleywood bread, breakfast cereals, biscuits, pasta and noodles, animal feed stuff efficiency;

(g) improving the production of starch derived syrups, sorbitol, xylose and/or xylitol;

(h) wheat gluten starch separation and production;

(i) improving maize processing, plant disease resistance and nutraceutical and/or pharmaceutical applications, improving paper and pulp technologies; and

(j) purifying endoxylanases in a process comprising affinity chromatography on N-hydroxysuccinimide (NHS)-activated Sepharose (RTM) 4 Fast Flow.

(IV) immobilized on an affinity chromatography support is useful for producing protein isolates and for depletion of xylanase inhibitor ligands, preferably xylanase in a medium or mixture of compounds, by complexing the ligands with the immobilized inhibitor. A preparation (VI) containing a xylanase inhibitor ligands depleted fraction is useful for modification or degradation of beta-glucan containing materials and for isolating selected xylanases that are not inhibited by a selected xylanase inhibitor. (VI) contains xylanases that are not inhibited by a selected xylanase inhibitor for degradation or modification of arabinoxylans in the presence of the selected xylanase inhibitors (all claimed).

pp; 128 DwgNo 0/27

5/AB/5 (Item 1 from file: 357)
DIALOG(R)File 357:Derwent Biotech Res.

0283330 DBA Accession No.: 2002-05177 PATENT
Separating and/or isolating inhibitors of cellulolytic, xylanolytic, or beta-glucanolytic enzymes comprises using endoxylanases during screening for inhibition activity or affinity chromatography with immobilized enzymes - involving vector-mediated gene transfer for expression in host cell, for use in beta-glucan degradation and food industry

AUTHOR: DELCOUR J; DEBYSER W; GEBRUERS K; GOESAERT H; FIERENS K; ROBBEN J; VAN CAMPENHOUT S
PATENT ASSIGNEE: LEUVEN RES and DEV 2001
PATENT NUMBER: WO 200198474 PATENT DATE: 20011227 WPI ACCESSION NO.: 2002-114579 (200215)
PRIORITY APPLIC. NO.: GB 200112328 (22.06.2000-2000GB-015296)
APPLIC. DATE: 20010521

LANGUAGE: English

ABSTRACT: DERWENT ABSTRACT: NOVELTY - Separating and/or isolating (M) inhibitors of cellulolytic, xylanolytic and/or beta-glucanolytic enzymes comprises screening the inhibition activity by using two or more enzymes during the separation and/or isolation steps that allow to distinguish inhibitors of different specificity or by using an affinity chromatographic step with immobilized enzymes and/or antibodies against inhibitors . DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following: (1) an isolated nucleic acid molecule (I) encoding an inhibitor which inhibits cellulase, endoxylanase , beta-glucanase, beta-xylosidase, alpha-L-arabino-furano sidase and/or other cellulose, xylan, arabinoxylan or beta-glucan degrading enzymes; (2) a recombinant DNA construct comprising (I); (3) a transcribed RNA product of (I); (4) an RNA molecule or its fragment which is antisense in relation to the (3) and is capable of hybridizing to it; (5) a vector comprising (I); (6) an expression system (II) transformed with (I); (7) a host organism (III) transformed with (I); (8) a recombinant protein , glycoprotein or polypeptide (IV) or a fragment of them, which is an inhibitor encoded by (I) or produced by transforming microorganisms, plant tissues or cells using (I); (9) an isolated antibody or its fragment that specifically binds to (IV); (10) a compound that modulates (IV); (11) a polynucleotide probe or primer comprising at least 15 contiguous nucleotides of (I); (12) a proteinic or glycoproteinic inhibitor (V) of cellulolytic, xylanolytic and/or beta-glucanolytic enzymes, obtainable by (M); and (13) a preparation (VI) containing the xylanase inhibitor ligands depleted fraction obtainable using (IV) or (V). BIOTECHNOLOGY - Preparation : (IV) is produced by culturing a host organism comprising (I) and recovering the protein (claimed). Preferred Method: In (M), the enzymes used are endoxylanases and comprise Bacillus subtilis and/or Aspergillus niger endoxylanase . The method involves a cation-exchange or anion-exchange chromatographic step. The immobilized enzyme is an endoxylanase and the antibody is an antibody against the recombinant inhibitor . The method further comprises an additional cationic and/or anionic exchange chromatographic step and screening the inhibition activity using two or more enzymes during the separation and/or isolation steps which allows inhibitors of different specificity to be distinguished. Preferred Nucleic Acid: (I) encodes a xylanase inhibitor , its variant, homolog or fragment. (I) is a genomic DNA and is operably linked to a promoter. (II) is deposited at the Belgian Coordinated Collection of Microorganisms with Deposit No. LMBP 4268. Preferred Protein : (IV) is a xylanase inhibitor and has the capacity of only partially inactivating its ligand. (V) is obtained from plant material such as cereals , cereal grains , cereal germs, cereal flours from wheat , durum wheat , rye , triticale , barley , sorghum , oats , maize or rice . The inhibitor is obtainable from microorganisms or its fractions, is an endoxylanase inhibitor and is a water - soluble species. The protein or glycoprotein is chosen from a group comprising proteins or glycoproteins having a molecular weight of 40 - 43 kDa, 30 kDa or 10 kDa, and a pI greater than 7 or about 7. Preferred Organism: (III) is a microorganism, plant , plant tissue or plant cell containing (I) operably associated with a heterologous regulatory sequence. Preferred Composition: In (VI), the xylanase inhibitor ligands depleted fraction is from a mixture of enzymes. ACTIVITY - None given. MECHANISM OF ACTION - Cellulolytic, xylanolytic and/or beta-glucanolytic enzyme inhibitor . No suitable biological data is given. USE - (M) is useful for separating and/or isolating inhibitors of cellulolytic, xylanolytic and/or beta-glucanolytic enzymes which are present in microorganisms, plants , plant materials or their fractions. A nucleic acid (I) is useful for modulating the activity of the inhibitor of cellulase,

endoxylanase , beta-glucanase, beta-xylosidase, alpha-L-arabino-furano sidase and/or other cellulose, xylan, arabinoxylan or beta-glucan degrading enzymes, by transforming microorganisms, plants tissues or plant cells with (I) which blocks or activates the inhibitor function. A recombinant protein , glycoprotein or polypeptide (IV) or microorganisms, plant or plant materials transformed with (I) are useful for: (a) formation of an endoxylanase - inhibitor complex, where the inhibitor mimics the normal substrate or binds in a way that it does not prevent binding of the normal substrate; (b) screening endoxylanases that are totally, less or not inhibited by the inhibitors or for modifying endoxylanases in such a way that they are totally, less or not inhibited by the inhibitors ; (c) reducing syruping in refrigerated dough compositions comprising flour and water; (d) affecting the relative affinity and/or relative hydrolysis specificity and/or relative hydrolysis rate versus water- extractable and/or water-unextractable arabinoxylans of endoxylanases such as by the formation of an endoxylanase / inhibitor complex; (e) improving the malting of cereals such as barley , sorghum and wheat and/or the production of beer; (f) improving the production and/or quality of baked or extruded cereal products such as straight dough, sponge dough, Chorleywood bread, breakfast cereals , biscuits, pasta and noodles, animal feed stuff efficiency; (g) improving the production of starch derived syrups, sorbitol, xylose and/or xylitol; (h) wheat gluten starch separation and production ; (i) improving maize processing, plant disease resistance and nutraceutical and/or pharmaceutical applications, improving paper and pulp technologies; and (j) purifying endoxylanases in a process comprising affinity chromatography on N-hydroxysuccinimide (NHS)-activated Sepharose (RTM) 4 Fast Flow. (IV) immobilized on an affinity chromatography support is useful for producing protein isolates and for depletion of xylanase inhibitor ligands, preferably xylanase in a medium or mixture of compounds, by complexing the ligands with the immobilized inhibitor . A preparation (VI) containing a xylanase inhibitor ligands depleted fraction is useful for modification or degradation of beta-glucan containing materials and for isolating selected xylanases that are not inhibited by a selected xylanase inhibitor . (VI) contains xylanases that are not inhibited by a selected xylanase inhibitor for degradation or modification of arabinoxylans in the presence of the selected xylanase inhibitors (all claimed). EXAMPLE - Two xylanase inhibitors , TAXI I and TAXI II were isolated and characterized from the wheat . The wheat endoxylanase inhibitors were further purified based on the method of Debyser and Delcour and Debyser et al.,. After each purification step, the resulting fractions were assayed for endoxylanase inhibition activity with Aspergillus niger and Bacillus subtilis endoxylanases and the purity was checked using sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE). After initial fractionation by cation exchange chromatography (CEC) on SP Sepharose (RTM) Fast Flow columns, two protein fractions, one with high inhibition activity against B. subtilis and A. niger endoxylanases (CECwheat I) and one with high activity against B. subtilis endoxylanase but much lower activity against A. niger endoxylanase (CECwheat II), were obtained. From CECwheat I, TAXI I was purified by gel permeation chromatography (GPC), followed by CEC on a MonoS (RTM) column. TAXI II was isolated from CECwheat II in a similar way. The SDS-PAGE profiles of TAXI I and TAXI II showed two polypeptides of ca. 40 kDa and under reducing conditions, additional 30 and 10 kDa polypeptides were seen. The 30 and 40 kDa polypeptides had the same N-terminal amino acid sequences, given in the specification. TAXI I had high activities against the A. niger, the Trichoderma viride and the B. subtilis endoxylanases , low activity against the rumen-micro-organism endoxylanases and little if

any activity against the A. aculeatus endoxylanase . The maxima of inhibition were slightly above 90 % for the first two endoxylanases , ca. 82 % for the B. subtilis endoxylanase and ca. 15 % for the rumen micro-organism endoxylanases . TAXI II had high activities against the T. viride and the B. subtilis endoxylanase , low activity against the rumen micro-organism endoxylanase and little if any activity against the A. niger and the A. aculeatus endoxylanase . The maxima of inhibition were slightly above 90 % for the first endoxylanase , ca. 77 % for the B. subtilis endoxylanase and ca. 8 % for the rumen micro-organism endoxylanases . Other xylanolytic enzymes, arabinofuranosidase and xylosidase from A. niger, were not inhibited by TAXI I and TAXI II. (128 pages)

5/AB/6 (Item 2 from file: 357)
DIALOG(R)File 357:Derwent Biotech Res.

0155506 DBA Accession No.: 93-13558
Purification and partial characterization of an endoxylanase from the anaerobic polycentric rumen fungus Orpinomyces PC-2 HZ - endo-1,4-beta-D-xylanase purification (conference abstract)
AUTHOR: Chen H Z; Ljungdahl L G
CORPORATE SOURCE: University of Georgia, Athens, GA 30602, USA.
JOURNAL: Abstr.Gen.Meet.Am.Soc.Microbiol. (93 Meet., 283) 1993
CODEN: 0005P
LANGUAGE: English
ABSTRACT: An extracellular endo-1,4-beta-D- xylanase (EC-3.2.1.8) was purified to homogeneity from a culture filtrate of the strictly anaerobic rumen fungus Orpinomyces PC-2 grown on 0.3% crystalline cellulose using Q-Sepharose anion-exchange chromatography, Phenyl Superose hydrophobic interaction chromatography, hydroxyapatite chromatography, followed by Superdex 75 gel filtration. The enzyme had the following physicochemical characteristics: (1) it was a monomeric protein ; (2) it had a mol.wt. of 29,000 (SDS-PAGE); (3) it had a pI above 8.0; (4) the Km and Vmax values with water - soluble oat spelt xylan as a substrate at pH 5.5 and 40 deg, were 2.15 mg/ml and 1,770 umol/min, respectively; (5) it had an optimum pH of 5.4 and an optimum temp. of 45 deg, and was stable at 45 deg and pH 5.5 for 30 min.; (6) it had an extremely high specificity for xylan; and (7) its activity was inhibited by N-bromosuccinimide, p-hydroxymercuribenzoate, SDS, Ag+, Cu2+ and Fe2+. (0 ref)
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